The UCSD/SDSU Mathematics and Science Education
Doctoral Program Proudly Presents a Dissertation Defense:

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Exploring the Relationships between Emergent Mathematical Practices, Individuals' Ways of Reasoning, and Meanings Constructed through Discourse

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The emergent perspective (Cobb & Yackel, 1996) is a way for researchers to conceptualize teaching and learning interactions that gives equal analytic focus to the social environment and individual cognition. According to this theory, individual students' conceptions and activities give rise to ways of reasoning that become accepted in the class community, called emergent mathematical practices. Students' participation in these practices then affects their personal conceptions and activities. With the study reported in this talk, I have contributed to researchers' understanding of the nature of the relationship between emergent practices and students' subsequent reasoning by documenting the mathematical practices that were established in a class community of prospective teachers studying exponential and logarithmic relationships while also investigating a subset of these prospective teachers' subsequent reasoning in an individual clinical interview. In contrast to previous research, I found the majority of students interviewed reasoned in ways that were qualitatively different from the established practice. I then developed a plausible explanation for how students could participate in class activities yet continue to reason in ways that differed from the established practice by examining the mathematical meanings constructed through the classroom discourse.